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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/035,042	12/27/2001	Alexander S. Krylov	051583-0252	9168

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EXAMINER	
WILDER, CYNTHIA B	
ART UNIT	**PAPER NUMBER**
1637	

DATE MAILED: 01/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/035,042	KRYLOV ET AL.	
	Examiner	Art Unit	
	Cynthia B. Wilder, Ph.D.	1637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 December 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a)☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4/8/02 + 9/8/03
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I (claims 1-16) in submitted on October 27, 2003 is acknowledged. However, upon further consideration and review of the prior art concerning the claimed invention, the restriction requirement has been withdrawn. Accordingly, claims 1-23 are pending in the instant invention and are discussed in this Office Action.

Priority

2. Applicant's claim for domestic priority under 35 U.S.C. 119(e) is acknowledged.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-4, 7-14, 17-19, 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Wang et al. (US 5,922,617, July 13, 1999). Regarding claims 1-3, 8-11 and 17-19, Wang et al. teach a method for characterizing a nucleic acid-protein interaction or a protein-protein interaction, comprising: immobilizing a nucleic acid or a protein on a solid support, (b) contacting the nucleic acid and the protein or the protein and protein under conditions which allow the nucleic acid and the protein to interact; and measuring the strength of the nucleic acid-protein interaction or the protein-protein interaction. (col. 1, lines 66-67 and col. 2, lines 1-14, and col. 7, lines 52-54). The reference further discloses wherein a plurality of different

components (nucleic acids or proteins) that are not predetermined sequences are immobilized at different addresses on the solid support and wherein the method steps are repeated to detect interaction between the components (nucleic acid or protein) col. 2, line 60 to col. 3, line 11 and col. 9, lines 24-25; see also col. 17, lines 56-67).

Regarding claim 4, Wang et al. teach an embodiment of claim 1, wherein the nucleic acid is ss or ds DNA or RNA (col. 4, lines 10-53).

Regarding claims 12 and 13, Wang et al. teach an embodiment of claim 1, wherein the nucleic acid is a functional nucleic acid sequence, such as a promoter (col. 9, lines 35-40, see also col. 7, lines 41-59).

Regarding claim 14, Wang et al. teach an embodiment of claim 1, wherein the protein (transcription factor) is capable of modulating the activity of a gene or gene product (col. 7, lines 41-59 and col. 9, lines 35-40).

Regarding claims 7 and 21, Wang et al. teach an embodiment of claim 1, wherein the strength of the nucleic acid-protein interaction or the protein-protein interaction is measured through fluorescence (col. 7, lines 21-33). Therefore, Wang et al. meets all of the limitations of the instant invention of claims 1-4, 7-14, 17-19 and 21.

5. Claims 17, 20 and 21 rejected under 35 U.S.C. 102(b) as being anticipated by Guschin et al (Analytical Biochemistry, Vol. 250, pages 203-211 (1997). Regarding claims 17 and 20, Guschin et al. teach a method for a protein-protein interaction, comprising: immobilizing protein on a solid support, (b) contacting the protein with a another protein (antibody)-fluorescently labeled under conditions which allow the nucleic acid and the protein to interact; and measuring

the strength of the protein-protein interaction (page 205 section entitled "Protein Microchips" and page 207, col. 2, lines 11-17 and 35-39). The reference further discloses d wherein the proteins are immobilized on a gel pad and analyzed using an multicolor epifluorescence microscope (page 207, col. 2, lines 11-17 and 35-39). Therefore, Guschin et al meets the limitations of claims 17, 20 and 21 of the instant invention.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 5, 6 rejected under 35 U.S.C. 103(a) as being unpatentable over Drobyshev et al (Nucleic Acids Research, Vol. 27, pages 4100-4105, 1999). Regarding claims 5-6, Drobyshev et al. teach a method of detecting nucleic acid-ligand interaction comprising the steps of immobilizing a nucleic acid on a gel pad solid support, contacting the nucleic acid and the ligand

under conditions which allow the nucleic acid and ligand to interact; and measuring the strength of the nucleic acid-ligand interaction by measuring through Tm or a change in Tm (Abstract and , page 4101, Section entitled "Materials and Methods). The reference does not teach wherein a nucleic acid-protein interaction is analyzed via a gel pad(s). However, the reference provides motivation for such analysis. The reference teaches that the use of gel pads as an immobilization support in oligonucleotide, DNA and protein arrays provides essential advantages over the use of probes attached to a solid support. The reference states that three-dimensional immobilization in gel pads provide higher capacity and a more homogeneous environment than heterophase immobilization on glass or filters (page 4100, col. 2 second full paragraph). Therefore, in view of the teaching of Drobyshev et al., it would have been obvious to one of ordinary skill in the art at the time of the claimed invention that the nucleic acid-ligand interaction method as taught by Drobyshev et al. could be modified to encompass a nucleic acid-protein interaction on a gel pad. One of ordinary skill in the art would have been motivated to utilize a gel pad for analysis of nucleic acid-protein interaction for the advantages of providing a higher capacity and a more homogeneous environment for analysis as taught by Drobyshev et al.

8. Claims 15, 16, 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al as previously discussed above in view of Ahern et al. Regarding claims 15, 16, 22 and 23, Wang et al. teach a method for characterizing a nucleic acid-protein interaction or a protein-protein interaction, comprising: immobilizing a nucleic acid or a protein on a solid support, (b) contacting the nucleic acid and the protein or the protein and protein under conditions which allow the nucleic acid and the protein to interact; and measuring the strength of the nucleic acid-protein interaction or the protein-protein interaction. (col. 1, lines 66-67 and col.

2, lines 1-14, and col. 7, lines 52-54). The method of Wang et al. differs from the instant invention in that Wang et al. does not teach the method in the form of a kit. However, Wang et al. teach reagents that would be necessary in the kit such as solid support, buffers and dyes. In a scientific article, Ahern teaches the advantages of using a kit. Ahern teaches that a kit provides convenience, time management and ease of practicing to the investigator (page 4, second-forth paragraphs). Therefore, in view of the teachings of Ahern, one of ordinary skill in the art would have been motivated at the time of the claimed invention to have modify the nucleic acid-protein interaction or protein-protein interaction method of Wang et al to encompass a kit. One of ordinary skill in the art would have been motivated to do so for the advantages taught by Ahern that a kit provides convenience, time management and ease of practicing to the investigator.

Conclusion

9. No claims are allowed. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cynthia B. Wilder, Ph.D. whose telephone number is (571) 272-0791. The examiner works a flexible schedule and can be reached by phone and voice mail. Alternatively, a request for a return telephone call may be emailed to cynthia.wilder@uspto.gov. Since email communications may not be secure, it is suggested that information in such request be limited to name, phone number, and the best time to return the call

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on (703) 308-1119. The official fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 0196.

Cynthia Wilder

CYNTHIA WILDER
PATENT EXAMINER